Thames Science Center

JAN.
1972

NATURALIST NOTEBOOK

JANUARY 1972 VOLUME VIII NO. 1

THAMES SCIENCE CENTER, INC.
GALLOWS LANE
NEW LONDON, CONNECTICUT 06320

FRONT COVER

"WINTER REFLECTIONS"
Photo by Frank R. Haeni

CONTENTS

JANUARY
THE MONTH OF TRACKS IN THE SNOW

We are often able to study animals and birds from their tracks when we are unable to make direct observations. A light snow on the ground provides ideal conditions for this kind of detective work. Following a trail for a distance and noticing where the creature stopped to feed or look about allows us to make astute guesses as to what went on.

Once, following tiny footprints across an open field, we came to a spot where they ceased entirely and two partial circles in the snow straddled the end of the trail. This suggested a pounce by a foraging owl whose wings splayed the snow before he took off with his prey. Snow sleuthing can furnish many clues for an imaginative observer to assemble into a nature vignette.

For comment on another sort of tracks, see inside back cover.

THIS MONTH—
The latest sunrises of the year occur between December 30-January 10, at 7:18 A.M.

♀ Venus is the Evening Star, setting between 7:09 P.M. on January 1 and 8:11 P.M. on January 31.

♃ Jupiter is the Morning Star, rising between 6:05 A.M. on January 1 and 4:23 A.M. on January 31.

Twelfth Night on January 5 is traditionally the time to take down your holiday greens.

● New Moon, January 16.

○ Full Cold Moon rises at 5:32 P.M., January 30.

ALONG THE SHORE

Text and Illustrations
by Barbara Kashanski

Bayberry

January is a month of short days, cold temperatures, snow, ice, and chilling winds. Few of us venture forth to roam our favorite warm-weather haunts such as the beach. What is it like there at this time of year? On the dune area, things are quiet and bare looking. The bayberry and beach plums have lost their leaves; naked branches with wizened fruit remain as reminders of greener days. The vines of poison ivy and Virginia creeper lie buried leafless under the snow or sifting sands. The roots of these perennial plants are still doing their important job of holding the sand in place. Without these plants, there would be no protective barrier between sea and land.

Meadow Mouse running

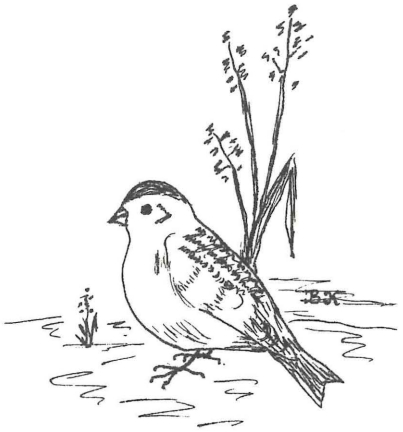
There are still signs of some activity in the dune area. The tiny footprints of the meadow mouse can be traced scurrying among the clumps of beach grass, suddenly to disappear down a hole in the snow. A cottontail rabbit has also been out exploring the cold wintry world. His tracks venture further than those of the mice but never too far from the safety of some cover.

Sea Rocket

As we approach the upper beach between the dunes and tidal zone, there is a quiet emptiness. The open flat spaces are uninterruped except by an occasional piece of debris or drift-

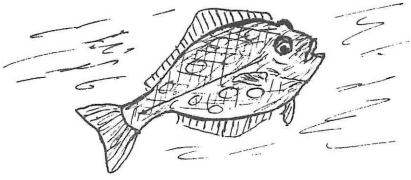
wood flung carelessly by an unusually high tide or storm. The succulent green plants, such as sandwort, saltwort, sea rocket, and dusty miller that gave color and relief to this stretch of beach in the summer lie dormant beneath the sand. Their tender waterfilled leaves and stalks are unable to stand the freezing temperatures. If we are lucky, a flock of snow buntings may come wheeling in and land on a wind-cleared spot. No weather is too severe or cold for them. Even during the worst windy snowstorm, these handy little birds from the Arctic can be found flitting about sandy areas whistling to each other in the most cheerful clear, tinkling notes.

Between the tides life goes on, but much less actively than in the summer. The sand may crunch where ice has formed among the grains of sand after the last high tide receded. The constant motion of the waves and tides keeps ice from forming along the tidal zone unless there is an unusual prolonged cold spell. Most of the little animals that make the tidal zone such a busy place during warm sunny summer days have moved to deeper water or have gone into a period of dormancy. Two shore birds may be found searching among the rocks and seaweed for small crustaceans. These are the purple sandpiper and dunlin.

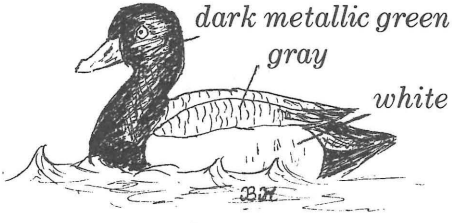


Snow Bunting

Above the surface of the water there are several kinds of birds bobbing on the waves that we don't see other times of the year. The common loon, horned grebes, cormorants in large numbers, white-winged, common, and surf scoters can be spotted offshore. Large rafts of greater scaup and golden eye gather at the mouths of our tidal rivers—the Thames, Niantic, Mystic, and Connecticut—during the coldest months. The red-breasted merganser is also a common winter resident.



Halibut



greater scaup

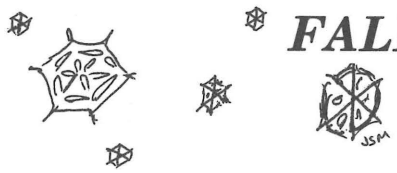
The area most active at the beach during the winter is offshore. Below the surface there are many fish, such as herring, haddock, cod, flounder, halibut, and striped bass, that prefer cold water and stay off the Atlantic coast all winter. Many of these fish even spawn during the winter in our coastal waters.

There are other fish caught here during the summer and fall that head to warmer waters during the winter months. Among these are the mackerel, tautog, weakfish, butterfish, and delicious bluefish.

If you need a change of scenery and would like to see what a familiar summer spot looks like in its winter dress, bundle up, bring binoculars and head for the shore.

P.S. Don't forget some sort of bag. One never knows what sort of treasure a winter storm may have left on the beach.

CAUTION — FALLING ROCKS



by Ruth M. Ritter

Already this winter most of us have been bombarded by millions of rocks. Rocks? Yes, snowflakes and sleet are rocks. To be a little more exact, they're a crystalized mineral—H_2O. We just don't think of these forms of water in such terms because we have more of it around than other minerals and mostly in molten (liquid) form. But at this time of year the stuff that descends gently or not so softly from above often has to be "transplanted" for us to get our cars and/or ourselves around.

How do we get snow and sleet? Snow is formed when water vapor in a cloud freezes. It always forms a six-sided crystal, but the patterns are always different. Both flat and needle-like crystals can be found if you look carefully. Those huge flakes that sort of dance their way to the ground are really globs of smaller crystals. You've probably seen lots of them during storms when the temperature is near 32 degrees. What about sleet? It occurs when a supercooled raindrop and a snowflake collide, and the raindrop uses the flake as a nucleus and freezes around it.

Did you ever wonder why snow is white while rain is clear? The myriad of surfaces on the snow particles reflect all the colors of the spectrum and thus look white. But, not *all* snow is white! Well, actually the snow itself is, but in such places as the Arctic and Greenland, occasionally there is green or red snow because of microscopic plants in the snow. Shades from grey to almost black occur around here, but I think most people won't blame that on plants!

Whatever color your snow may be, it still has to be shovelled. Anyone with experience can vouch that the weight of different snowfalls can vary tremendously. One inch of rainfall equals about six inches of soggy snow or thirty inches of that delightfully fluffy stuff. Why is snow is mineral is rock? Water crystals can be tested, just as other minerals can, for hardness, luster, and cleavage. The three rock-formation processes can be seen with snow, too. Look up *sedimentary*, *igneous*, and *metamorphic* in a guide to rocks and minerals and see if you can see comparable structures all around you. Snow also erodes as rocks do. After or during a snowfall watch what the wind can do with the snow. If the snow is firm, it can carve mesas, canyons, and natural bridges. If it is lighter, you can see snow dunes and drifts. Much of this formation happens in a few hours or days with snow. Compare that with other rock!

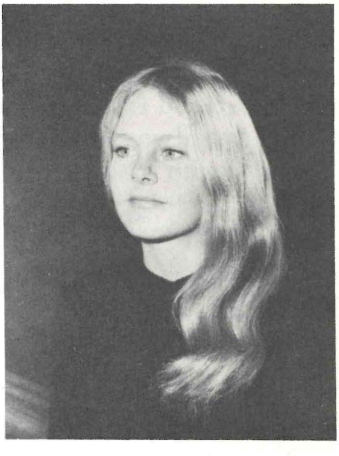
If you think you have a lot of rocks to shovel this winter, just feel sorry for poor ol' Mt. Rainier in Washington which got 1,000 inches of snow in the '55-'56 season. Whew!

AUDUBON WILDLIFE FILM

For a contrast to our January snows, take a look at the warmth and color of Bermuda and the surrounding underwater world of coral reefs and Gulf Stream waters as Janet Jahoda presents

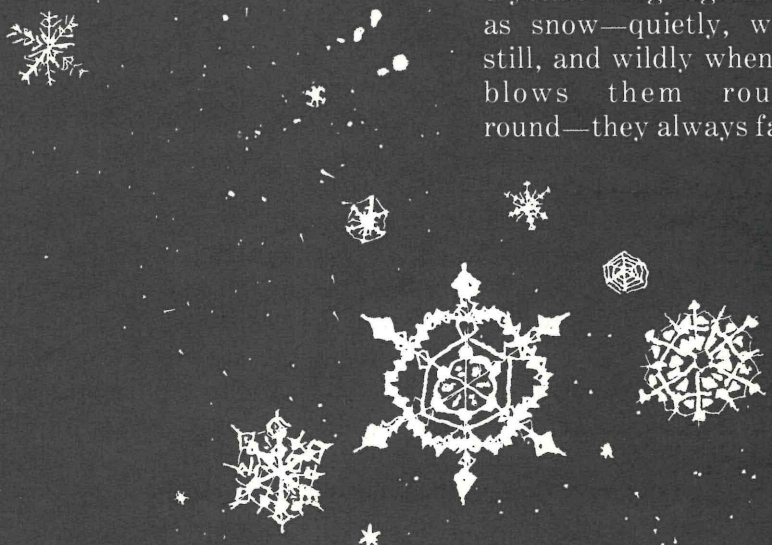
Bermuda—Land and Sea

Sunday, January 23, 1972
3 P.M., Palmer Auditorium



A JANUARY SNOW PROJECT

Snowflakes are tiny crystals of ice that form in the clouds when it is below freezing. The crystals cling together and fall as snow—quietly, when it is still, and wildly when the wind blows them round and round—they always fall down.



Cool black construction paper in the refrigerator. Catch snowflakes as they fall on the paper and examine them under a magnifying glass. Snowflakes are six-sided HEXAGONS.

Some say there are no two snowflakes alike.

by Shelley White

LAKES AND SEASONS

by Stephan Syz

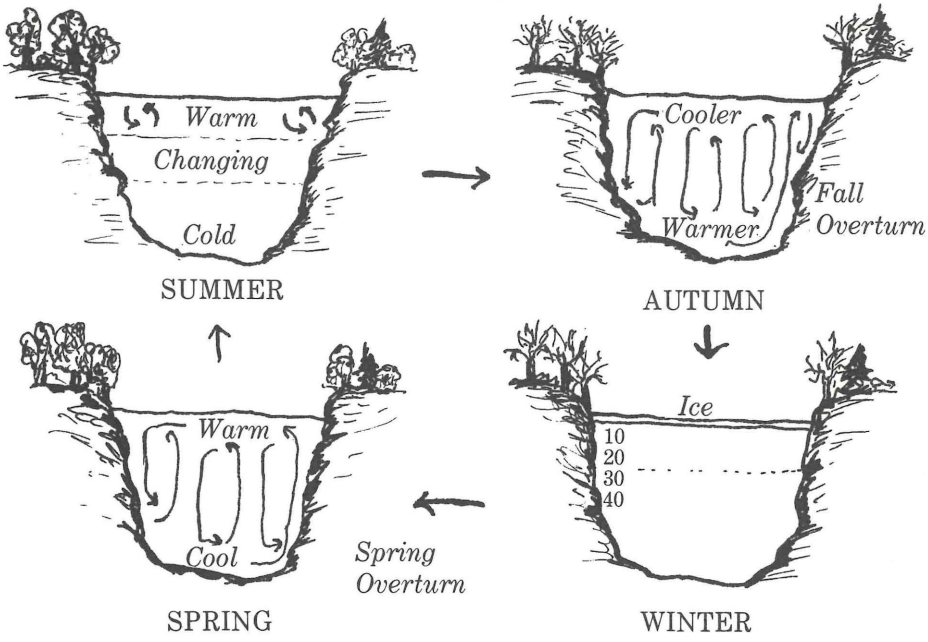
At approximately 39 degrees F., water is most dense and, therefore, heaviest. Other liquids simply get denser and heavier as they get colder, but between 39 degrees F. and freezing, water most remarkably expands, becoming lighter. Were water to behave as many other liquids, then in winter lakes would freeze solid and afford no protection for fish and aquatic animals under a surface layer of ice.

A lake undergoes changes in different seasons which trout, insect larva, and other animals depend upon. In the summer a lake becomes divided into three levels. The *top layer* contains buoyant, warm water and is uniform in temperature. Wind over the surface creates turbulence and currents which circulate oxygen throughout this layer. The *bottom layer*, on the other hand, is very cold, often no more than 41 degrees F. Due to its density and the fact that it is overlain by a *middle layer* of water of gradually decreasing temperature, the bottom water does not mix with the surface water and, therefore, gets no new oxygen during the summer. In young lakes enough oxygen remains in the bottom layer for fish requiring cold water, such as lake trout. Pollution, however, can cause plants to grow on the surface. These die, rain down into the lowest levels of the lake where they decay, and in so doing exhaust the supply of oxygen. Trout are unable to tolerate such an absence of oxygen.

With the onset of cooler weather, the temperature of the top layer drops until it equals that of the bottom layer. Now, as the surface water gets cooler, it sinks, producing a phenomenon known as "fall overturn." The water of the entire lake circulates, top to bottom, restoring the oxygen supply. This continues until the lake uniformly becomes 39 degrees F. The water near the surface then becomes colder but now *lighter* and finally forms floating ice, while all of the rest of the water below remains at 39 degrees F. In winter there is usually adequate oxygen for fish since cold water holds oxygen well. A "winter kill" of fish can occur at times if a blanket of snow forms so deep on the ice that light is prevented from getting

through to tiny floating algae that continue to produce oxygen throughout the winter. A recent study has concluded that fish kills have been caused by heavy use of snowmobiles on lakes which has compacted snow and blocked light.

WATER TEMPERATURE IN DEEP LAKE



As spring approaches, the ice melts, and the water becomes warmer on the surface. Up to 39 degrees F.; this getting warmer means getting heavier. Thus, it sinks to the bottom; another huge circulation, the "spring overturn," occurs, and the lake takes another "deep breath" before becoming stratified again in the summer.

THE PHENOMENON CALLED MIGRATION

by Frank R. Haeni

When the birds that have nested in our door-yards and those that have frequented the neighboring woodlands and shores leave us in the fall, certain questions arise: Where do they go? How do they find their way to their wintering grounds? Will the same birds come back next spring?

The migrations of birds were probably among the first natural phenomena to attract the attention of early man. Recorded observations on migration data back nearly 3,000 years to Homer, Aristotle, Hesiod, and others. References in the Bible also question the movements of birds. Jeremiah (8:7) wrote "The stork in the heavens knoweth her appointed time; and the turtle [dove], and the crane, and the swallow, observe the time of their coming."

Hibernation was used to explain the autumnal disappearance of certain species of birds. The birds were alleged to hide in hollow trees, caves, or in the mud of marshes. The hibernation theory survived for more than 2,000 years. The only bird known to hibernate or go into a torpid condition is the Poor-will. The Hopi Indians seemed aware of this phenomena, for they called the Poor-will "Holchko"—the sleeping one.

Another theory explaining the disappearance of birds was that they flew to the moon. The early naturalists theorized that it took the birds 60 days to get there.

Migration is defined as any movement between two areas. Among birds there are two common kinds of migration: daily and seasonal. Daily migration is movement to and from a familiar place, such as a roosting area. Seasonal migration involves a passage at one season from a place of hatching and a return at another season to the same general area.

Migration is synchronized with the annual seasonal changes, but it will not take place until the bird is internally prepared and outwardly responsive to a stimulus—changes in the weather and/or shortages of food. Before migrating, a bird must eat large amounts of food in excess of its daily needs. The fat stored in the bird's body will be utilized during the long flight.

Probably one of the most difficult questions to answer is how a bird finds its way home. Experiments have been done in which birds transported long distances from their homes were released and within a short period of time returned to their homes. An example of this is a Manx Shearwater carried by airplane to Boston (over 3050 miles from its breeding island off Wales) which was found back in its nesting burrow 12½ days later, arriving ten hours before the boat that brought the letter announcing the bird's release.

It appears that for birds that travel by day, the sun serves as guide. The birds are able to compensate for its continuous motion. Part of this "sense of direction" is believed to be inherited. Migrating birds do not stop travelling in overcast weather unless the clouds close right down; then they must use secondary clues such as landmarks to maintain their direction. Birds that travel at night appear to get their bearings from the stars and some landmarks or habitats.

Among the more sophisticated methods of studying migration are tiny radio transmitters strapped to birds' backs. Colored streamers, which date back to the days when the Romans marked swallows with colors of the winning chariot races, also may be attached to the wings or legs of birds. Still another method is to duplicate the constellations inside a laboratory: the caged birds are then rotated in accordance with the normal rotation of the earth and later the cages are rotated completely opposite to the norm. When the birds are released into the wild they appear to gain their bearings after a few minutes and fly away.

Even with our space age technology, we are still unable to decipher one of nature's closely guarded secrets, the phenomena called migration.

FROM THE DIRECTOR . . .

by Robert S. Treat

The formation of the Connecticut Association for Environmental Education may not be the most exciting topic to read about, but it may well be one of the most important. Because of its possibilities for environmental education in Connecticut and for the Science Center, and therefore its members, it seems more than worthwhile to bring this new organization fully to your attention.

Beginning with that often-used term *environmental education*, the Steering Committee defined it as "the educational process dealing with man's relationship with his natural and man-made surroundings and including the relation of population, pollution, resource allocation and depletion, conservation, transportation, technology, and urban and rural planning to the total human environment."

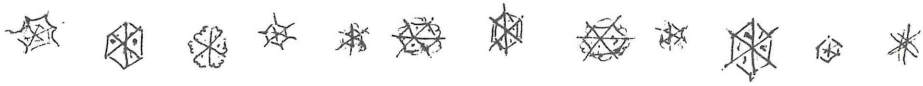
The newly-written constitution states that the purpose of CAEE is to work toward the advancement of programs and activities covered by this definition, achieving its purpose

(a) by establishing lines of communication and promoting cooperation between environmental education agencies for the stimulation of thought, exchange of ideas and mutual assistance;
(b) by maintaining communication with related professionals, with administrators, and with the public to promote interest in and understanding of the objectives of environmental education programs;
(c) by encouraging educational institutions to establish curricula and programs leading to a total community environmental literacy;
(d) by engaging in the development and implementation of innovative programs in environmental education; and
(e) by establishing educational, professional, and ethical standards for the guidance of environmental agencies.

Nature center directors have been meeting informally for a number of years in the spring and fall, but we have never been organized really to benefit or promote environmental education throughout Connecticut nor even to be of much assistance to ourselves.

CAEE is not yet another alphabet soup arrangement, nor "one more committee," but rather the formal structure of a group that has had common interests, but independent roles, for many years. We now will be able to speak as one voice in Hartford and throughout the state. This should mean more information for each Center, possibly funds, but certainly better cooperation on programs, new ideas, museum exhibits, and more informative positions taken on environmental issues and a more powerful voice in these matters.

All these factors can only result in an even more active and vital Science Center here in New London.



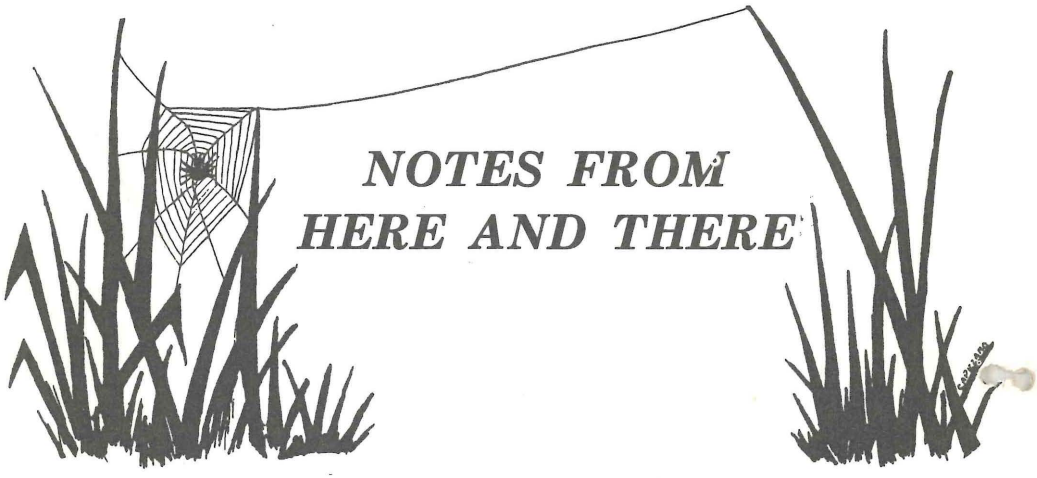
THE SECOND ANNUAL GIVING program has met with a lively response. Our financial need is great, but the Science Center is much encouraged because of the following letter just received:

Dear Sirs:

The seventh grade S.O.S. Club of Lyme Consolidated School has decided to support Thames Science Center financially as our yearly project. We will contribute to the Center what we make by cake sales, rummage, etc., at the end of the year.

Sincerely yours,
Laurie Woodstock, Secretary
of the S.O.S. Pollution Club

With that kind of support, how can we fail to achieve our goal! Remember, we have been given a matching gift of $4,000 on a two-to-one basis, which means that in order to obtain $12,000 we must first raise $8,000. Will you help?



NOTES FROM HERE AND THERE

OUR NEW OUTSIDE LIGHTS are a most welcome and needed gift of the Thames Valley Rockhounds. Our sincere thanks to the Rockhounds.

FRIENDS OF THE CENTER: Mr. William D. Lyon, Jr. and Mrs. Edmund Rice have renewed their Friend memberships.

BATTLEBOOKS RECOMMENDED: *Battlebooks* are the Sierra Club's response to the need of putting thoughtful and well documented but highly readable books on current, crucial environmental issues before the public in a hurry. Published by Ballantine Books, the following *Battlebooks* are available:

Clearcut: The deforestation of America, by Nancy Wood, 176 pages, $2.75.

Energy: A crisis in power, by John Holdren and Philip Herrera, 256 pages, $2.75.

Oil on Ice: Alaskan wilderness at the crossroads, 160 pages, map, $1.95.

Oilspill: by Wesley Marx, 208 pages, $2.75.

Mercury: by Katherine and Peter Montague, 160 pages, $2.75.

SAVE NAPATREE POINT: The Napatree Point Conservation Committee has been formed to save this unique barrier beach and bird sanctuary. Sound ecological practices such as vehicle prohibition, erection of snow fences to help stabilize the dunes, and additional signs to delineate habitat and nesting areas and to guide visitors to the trails are fine examples of what concerned citizens can do to save their environment.

FIELD NOTES

NOVEMBER 10 — DECEMBER 10

Most of our winter residents have arrived, as shown by the flurry of activity at feeders and in the woodlands. Our first snowfall arrived Nov. 10.

New London, Waterford: EVENING GROSBEAKS, with their erratic feeding habits, arrived in Uncasville Nov. 15, in Waterford Nov. 22, and in Quaker Hill Dec. 6. A RUBY-CROWNED KINGLET was seen on Oil Mill Road Nov. 18, and two HERMIT THRUSHES were still in Waterford Nov. 11. At Harkness Park two GREAT BLUE HERONS seen Nov. 5 were still there Nov. 21. A third was seen Nov. 14. Five KILLDEER and six PURPLE SANDPIPERS were seen Nov. 5, two SNOW BUNTINGS Nov. 12, and a MEADOWLARK, a SAVANNAH SPARROW, and a CORMORANT Nov. 21. Magonk Point had a variety of birds including a RED-THROATED LOON Nov. 13, a RED-HEADED WOODPECKER that stayed Nov. 7-11, and a PIGEON HAWK Nov. 5. Along the Waterford beach three GREATER YELLOWLEGS and five SANDERLINGS were seen. The combination of mild weather and abundant food supply kept fifty LAUGHING GULLS past their usual departure date. BONAPARTE'S GULLS were also numerous along the coast.

Norwich, Inland: Birders on a TSC-sponsored field trip in early November found 18 species, including CATBIRD, ROBIN (3), HERMIT THRUSH, MOCKINGBIRD (2), PURPLE FINCH (flock of 40), EVENING GROSBEAK (2) and GOLDFINCH (4). Most of the birds observed were in the Rogers Road area. Other interesting observations include REDPOLLS Nov. 23 and a flock of fifty COWBIRDS on Dec. 4. Birding on Dec. 1 produced a rare PILEATED WOODPECKER in the Willimantic area.

Mystic: A KILLDEER was heard Nov. 21, 22, and 27 along the Mystic River. Also on the river were two late BLUE-WINGED TEAL on Dec. 2. A MOCKINGBIRD was sighted in Mystic Nov. 15. A few GOLDENROD plants were still flowering until the Thanksgiving Day snowstorm.

ATTENTION BIRDERS!!! In addition to the normal Fish & Wildlife Service bands used to mark birds, dyes, streamers, and neckbands are also used. With the use of the color markers, migrational patterns can be traced without recapturing the birds. Two MUTE SWANS on the Mystic River are wearing a yellow and a green neckband. If you observe any color-marked birds, please note the date, location, time, location of marker or dyed area, and your name, and contact Frank R. Haeni at 443-4295.

Niantic, the Lymes, Old Saybrook: BLUEBIRDS were reported in East Lyme Nov. 18 and 20 and in Old Saybrook Nov. 28. A rarely seen SORA RAIL was in Old Lyme Nov. 8. A late female BALTIMORE ORIOLE was in Niantic Nov. 11 and a late CAPE MAY WARBLER was at a feeder in Old Lyme from Nov. 12-18.

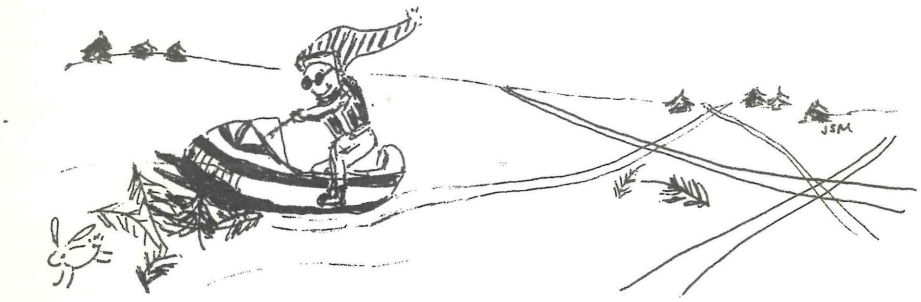
Rhode Island Shoreline: Highlights of a Nov. 21 trip included thirty DOVEKIES off Point Judith, when both male and female MARSH HAWKS were also seen. Waterfowl were also well represented with 600 CANADA GEESE at Moonstone, two SNOW GEESE, a GREEN-WINGED TEAL, REDHEADS, RINGNECKS, and RUDDY DUCKS as well as CANVASBACKS, LESSER SCAUPS, and OLD SQUAW. An IPSWICH SPARROW was the highlight of that family; others included the SAVANNAH, VESPER, TREE, FIELD, SWAMP, and SONG. Observations at Weekapaug include a SHORT-EARED OWL Nov. 16, two COMMON EGRETS Nov. 20, and 25 GANNETS Nov. 25. Watch Hill observers saw a RAZORBILL Nov. 18. At Weekapaug a WHITE-CROWNED SPARROW was seen Nov. 5.

Contributors: N. Benton, G. Bissell, B. Dassinger, F. Haeni, K. Haeni, B. Kashanski, H. Kelsey, A King, Mrs. J. Kish, J. Merrill, Mrs. W. Quincy, D. Russ, E. Saunders.

THURSDAY, JANUARY 27, 1972—A DATE TO REMEMBER! The Thames Science Center Annual Dinner Meeting will be held on this day. Invitations with time, location and program will be mailed to all members shortly, but set the date aside now.

WINTER MENACE

by Frank R. Haeni



Until recently it was a very special thing to be the very first human to make a track across a silent snow-blanketed field or forest. But now, with a rushing, roaring and whizzing, the snowmobile cuts across these winter frontiers.

There are now over one-half million snowmobiles in use in North America; and, while they allow more people to recreate and enjoy the snowy winter months, they also pose many problems when operated by thoughtless drivers.

Constant snowmobiling on a regular path over a lawn or field will cause severe damage to the dormant vegetation, which can be seen in the spring. A similar situation arises on a lake or river. The compacted snow prohibits sunlight from reaching the aquatic plants, thereby reducing photosynthesis. This, in turn, reduces the amount of oxygen in the water which is necessary to sustain life. Even wildlife suffers when some snowmobilers chase to death foxes, deer, and other innocent animals for "sport."

While snowmobiles add another dimension to the enjoyment of the winter wonderland, owners should remember that they can destroy in seconds that which has taken nature years to grow.

NATURALIST NOTEBOOK

Published by the
THAMES SCIENCE CENTER
Gallows Lane
New London, Connecticut 06320

The NATURALIST NOTEBOOK is published 10 times annually. Subscription available through membership only.
The Thames Science Center is a nonprofit organization seeking a quality environment through education.
The active support of children and adults in the Science Center, its programs, activities and efforts is earnestly solicited.

JOSEPHINE S. MERRILL
Editor

Non-Profit Org.
U. S. Postage
PAID
Quaker Hill, Ct.
Permit No. 9

THAMES SCIENCE CENTER
GALLOWS LANE
New London, Connecticut 06320

PALMER LIBRARY
CONNECTICUT COLLEGE
NEW LONDON, CONN. 06320

RETURN REQUESTED

We Need Your Active Membership and Support

THAMES SCIENCE CENTER
GALLOWS LANE, NEW LONDON, CONN. 06320
Phone: 443-4295

Annual dues: 12 months from _____

Name .....

Street ..... **City** .....

Phone..... **Zip Code**.....

CLASSES OF MEMBERSHIP

- ☐ Annual $7 (each adult member of family)
- ☐ Family $12
- ☐ Supporting $25
- ☐ Friend of the Center $50
- ☐ Organization $15
- ☐ Junior (under 16) $4
- ☐ A special gift toward support of the Science Center effort is included $ _____

Please make checks payable to The Thames Science Center
Contributions are tax deductible